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Thirty days outcome of laparoscopic versus open umbilical hernia repair

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ABSTRACT

Umbilical hernia replacement is commonly done via surgery. Many types of surgical interventions exist. Ultimately, laparoscopic approach results in better outcomes in terms of recurrence and cosmesis and activity revert back, even if the procedure is done open. Although this may be the case, the question of what is the best way to repair has yet to be resolved. Forty and thirty-one patients were diagnosed with open and laparoscopic mesh repair in this research, and were followed for thirty days to find out if there were any differences between treatments.

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1. Introduction

The medical term for hernia is a weakened or disrupted fibrous wall of the body's wall. Hernia was one of the most ancient illnesses that humankind has endured (1).Table 1.

Para-umbilical, epigastric, and Spigelian hernias are all classified as primary ventral hernias (2). In European Hernia Social system terminology, abdominal wall hernias ranging from 3 cm above the umbilicus to 3 cm below the umbilicus are defined as umbilical hernia (3). in adults, it accounts for 6% of all abdominal wall hernias (4). Atypical and rare cases of umbilical hernia include incidental findings, large and complicated hernias with fistulas and viscera located outside the abdominal cavity, and these conditions can only be discovered if the abdominal contents are manually and carefully removed (loss of abdominal domain). Women experience it more frequently. Pregnancy and obesity are both commonly preceded by multiple pregnancies. it is determined by leak diameter in the following way: (4) It is categorised into small (under 0.2 cm), medium (0.2 cm to 2 cm) and large (over 2 cm) based on defect diameter (5).

Surgical treatment is the therapy of choice for the majority of surgical problems. The classical repair was first described by William Mayo in 1901. (6). The introduction of prosthetic mesh repair has reduced the initial high risk of recurrence (5).

Onlay open repair will typically necessitate adequate percutaneous dissection, flap elevation, and drain implantation. Infection is more likely to occur with this method of open onlay fix. Such facts result in the continuation of studies on the best way to treat patients, and this helps lead surgeons to favour the laparoscopic strategy. open mesh restore of umbilical and paraumbilical hernias (7). Regrettably, even after nearly two decades of laparoscopic umbilical hernia repair experience, there is a lack of decent evidence indicating the procedure's long-term effectiveness. Most of these studies are retrospective, which makes it difficult to determine the best procedure with better long-term outcomes [25–28]. In this retrospective study, the aim was to evaluate open onlay mesh herniorrhaphy versus laparoscopic intraperitoneal onlay mesh repair (IPOM) for umbilical hernia following the first thirty days following surgery (8,9).

2. Aim of study

During the first thirty days comment, open onlay mesh herniation repair is compared to laparoscopic intraperitoneal onlay mesh maintenance of umbilical hernia. the treatment time, postoperative pain, and surgical wound problems are the variables for contrast

3. Materials and methods

A prospective study is currently taking place in Basrah Teaching Hospital. Patients are examined, professional manner hospitalised,

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Table 1
mean pain analogues score in both groups.

Parameter	Day (zero) postoperative		One day postoperative*		7,14,30th day postoperative	
	Group A	Group B	Group A	Group B	Group A	Group B
Mean(visual analogous score)	5.76	5.77	5.57	3.17	Zero	zero

* statistical significance at $p \geq 0.05$

handled, and repaired via either laparoscopic or open surgery and then observed over the first week, the seventh week, the fourteenth week, and the thirty-first week for any changes in their health parameters. Using SPSS, the data were analysed (version 20).

4. Patients and methods

A prospective clinical survey was performed between December 2015 and November 2019 in the Department of Surgery in Basrah Teaching Hospital.

The survey was commissioned ethical approval by the Institute's Ethics Board. In order to rule out umbilical hernia, also every patient was assessed with a medical history and physical examination[29,30].

Letting each patient choose between open onlay mesh umbilical hernioplasty (group A) or laparoscopic intraperitoneal onlay mesh repair (IPOM) was recommended to all patients by the same surgeon (group B).

In order to have reduced the risks of anaemia, they removed anyone who had previous surgery for a hernia or anyone who had co-morbidities like heart failure, ischemic heart disease, and chronic obstructive pulmonary disease, making them unfit for general anaesthesia. A large and complex hernia, combined with another major surgery such as laparoscopic cholecystectomy or inguinal hernia.

Patients underwent a typical preoperative workup and gave their consent to participate in the study before having surgery. Preoperative antibiotics were administered via intravenous drip prior to induction of anaesthesia. In addition, two more doses were given postoperatively every eight hours(10).

Group A: The patient is placed in the supine position, where a supraumbilical curve incision is made. During the procedure, the hernial sac is mobilised and its content is reduced. After closing the defect with interrupted monofilament 2/0 nylon sutures, we set an onlay polymer mesh which is polyproline. Every case was installed with closed drainage (Radi vac). With subcutaneous suture, the skin was sutured together(11).

technique used in surgery B groups are - Two ports were implanted, one in the left hypochondrium, below the left costal margin line, and the other in the anterior axillary line. Sometimes, an additional port 5 mm was provided in the complicated lumber case. A 30° fish-eye camera is often used to examine the peritoneal surface cavity, liver, and abdominal wall after the CO2 has been introduced via the Veress needle. Using titanium tacks (Protack, Covidien) will significantly reduce the amount of the incarcerated subject matter as well as help to keep the sac invaginated and fixed in place. After decreasing the intra-abdominal pressure to 8–10 mm Hg, the corners of the hernia defect were located circumferentially and the size of the deformity approximately by passing a spinal needle transabdominally. to these observations, 6 cm was added in both the directions to cover the entire area between the hernia mesh and the patient's face (maintaining a distance of 3 cm between the edges of the mesh and the patient's face). Next, dual mesh (Parietex mesh®) sized 15×20 cm was inserted through the camera port and repaired to the posterior abdominal wall with transfacial sutures that were pre-made beforehand. There were only a few pellets placed, but they were also used to patch some of the mesh laterally to the abdominal wall so that bowel and other abdominal components would not be trapped in the mesh. Since there were no drains in place, the port sites were left unplumbed and closed under surveillance. Operating time and the size of the defect were noted intraoperatively(12,13).

During surgery, patients were checked to see if they had recovered from anaesthesia and given intravenous fluids for 12 h. Afterwards, they started to receive oral fluid diets and fully recovered after 12 h. The number of days that patients were in the hospital after surgery was counted as the number of nights that they were in the hospital. in addition, the patients in both groups were instructed to continue taking antibiotics orally for five days, and their follow-up appointment was scheduled in the clinic or outpatient department in 7th, 14th, and 30 days after the operation.

During hospitalisation, a Visual Analog Scale (VAS) was used to track postoperative pain and the intensity of the pain every day (Fig. 1). (5).

Ultrasound detected haematoma or a wound seroma.

Typically, the findings are reported as the mean and standard deviation, or the median with the range of values. The models were tested by the Chi-square test for independent data. The models were tested using Student's unpaired *t*-test for categorical variables. This study used SPSS 20.0 software for descriptive statistics. This was classified as a significant p-value (below 0.05).

5. Results

A patient is treated with regular class mesh repair and laparoscopic intraperitoneal mesh repair, and the treatment is conducted on a case-by-case basis according to age and sex. Long production time, more postoperative pain in the first day, more internal bleeding, and more seroma can be correlated with laparoscopic surgery.

An estimated 83 patients began the study; 12 of them did not attempt the follow-up and were therefore no longer part of the research. Of the remaining 71 patients, 19 were males and 52 were females, with the male to female ratio being approximately 1:4.

People in this study range from 19 to 70 years of age, with an average age of 35.2 years. Forty patients underwent open repair, which is classified as group A, and there are 31 patients who underwent intra-peritoneal onlay repair, which is classified as group B, for a total of 61 patient populations.

Hernial defect was measured using a calibrated scalpel, as the defect had a known diameter. with a mean of 4.7 cm, it ranged between 3.5 and 6.0 cm

Group (A) had an average procedure duration of 58.5 min while Group (B) had an average procedure duration of 46.5 min.

With an analysis of the statistical significance of the results, it can be observed that open mesh repair was longer than laparoscopic repair and this is statistically significant.

Tables (1) shows the mean VAS score for both groups. It is apparent that patients in group A experienced more pain in the first postoperative day than patients in group B, but the two groups both had the same intensity of pain after 24 h. Similarly, in the 7th, 14th, and 30th days post-surgery, none of the patients in either group reported any significant pain (1).

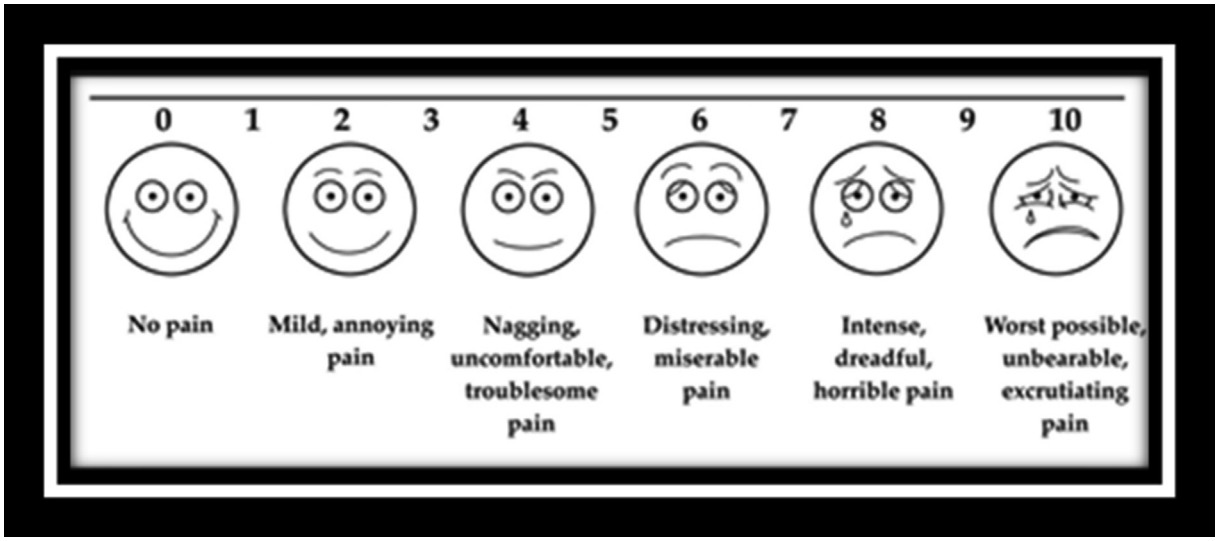

Fig. 1. visual analogue score .

All of the patients (group A and B) were well enough to come to the hospital on the second day. the null hypothesis was not rejected.

The 14% postoperative complication rate seen in the both teams after this follow-up period applies to this question. This group (A) charged an additional rate unlike group (B) (at 17.5% versus 9.6%). Hernia defect size > 4 cm was most often the source of abnormalities. According to Table 2, each of these things happens twice as often.

not unusually, a wound seroma, a pocket of straightforward serous fluid, would form in the place of surgery if the patient was in the same group (A) as everyone else (B).

the development of shoulder pain occurred only with laparoscopic surgery.

6. Discussion

Umbilical hernia chemo is the recommended treatment for this condition. Laparoscopic intra peritoneal mesh repair and open mesh repair are the primary types of mesh repair.

In this research, we looked at how long laparoscopic umbilical hernia mesh repair takes versus open method mesh repair, and focused on the moment for treatment, pain, hospital stay, wound morbidity, and seroma.

One of the main results of our study was that hernia repair was completed laparoscopically in fewer minutes than open surgery; this finding was not revealed by others (1,5,8,13–15). These distinctions in outcomes can be explained by the rigorous selection process, the rapidly expanding laparoscopic expertise, the lack of sectioning to the hernial sac, and the use of pre-made transfasial suture(14).

Hospitalized patients laparoscopically reported lower levels of pain after surgery compared with patients by open surgery.

Table 2
post-operative difficulties in both groups.

Group B	Group A	Variable
6.5% (2:31)*	17.5% (7:40)*	Wound infection
10% (3:31)*	0% (0:40)	Shoulder pain
10% (3:31)*	15% (6:40)	Seroma
0% (0:31)	2.5% (1:40)	Haematoma

* Statistical significant at $p \geq 0.05$

Laparoscopic repair, compared to traditional open surgery, is believed to have lower post-operative pain (15). After operations, many things can affect the level of pain that a patient experiences, and one of these things is the use of tacks. They are effective in reducing post-operative pain because they partially penetrate the abdominal muscles and fascia, resulting in less local muscle ischemia. As older patients have understood to help compete with post-operative pain, they are more likely to have low pain tolerance. According to the research team by the name of Callesen, he and his colleagues theorised that these outcomes are due to their higher level of activity and increased expectations for the postoperative course (16). In open surgery, because of long incisions, extensive dissection, and raising of adequate flaps for mesh fixation, postoperative pain is generally more. Several biological, hormonal, or mental and emotional factors may be responsible for these distinctions.

The use of tacks greatly reduces postoperative pain and operating time as contrasted to suture fixation of the mesh (17).

Laparoscopic surgeries can be very physically taxing, especially in the first few hours post-operatively. When it comes to shoulder pain after such surgeries, it's not unusual to blame this on irritation of the phrenic nerve by CO2 pneumoperitoneum. There were only three patients (10%) among our patients who have experienced chest pain, which is significantly lower than the incidence reported by others (35–80%) We usually opted for the delayed injection of gas using a veres needle, which involved suctioning the gas postoperatively, particularly after the hepatic, subphrenic, and subhepatic regions. shoulder pain going to follow laparoscopic procedures can be drastically decreased through these methods (18)

Although the umbilicus is not an entirely clean anatomical location, this is an expected result. Even with the use of modern antiseptic solutions, the skin may not be completely cleansed of all bacteria. As a result, umbilical hernia repairs result in a higher incidence of surgical site infections than those associated with other hernia repairs (2,3) Due to the relatively small surgery and place of the incision, laparoscopic surgery is less likely to infect. In open repair, the incision is longer and is placed in areas with higher infection risk. The final outcome is a wound infection incidence between 1 and 8 percent (19). Also, similar to the previous studies, our results show substantially more surgical site infection in open repairs (group A) than laparoscopic repairs (group B). Later, after our laparoscopic surgical instruments had been sterilised, we discovered the issue and resolved it (18–21). Patients who have

seroma, presented clinically between 7th and 21st post-operative days, have an 8% risk of developing surgical site infection. Furthermore, camera port problems are often due to skin flora, the most common of which are found at the camera port. Antibiotics and antiseptic dressings were effective in all situations.

Seroma formation is not uncommon in both open and laparoscopic repair . it composed of blood plasma that has seeped out of ruptured small blood vessels and the inflammatory fluid produced by injured and dying cells and occurs usually above the mesh and within the ruminants of hernia sac (20,21). It is presented as painless surgical site swelling within the first 8 weeks post-operatively. Its incidence varies depending on when the investigators search for it . . if searched in first 4–8 weeks ; the incidence is around 11.4% which is in agreement with our results (10%). After 8 weeks , seroma became more clinically apparent in 2.6%[(1)] . In our study , the incidence of seroma was more common in group (A) and presented earlier (7–14 days) than group (B) (14–30 days) and this is attributed obviously to the extensive soft tissue dissection that is needed for the application of mesh in the open repair when compared with laparoscopic one . Regardless of whether they are aspirated under sterile conditions or allowed to resolve, seroma rarely result in long term problems and usually resolved in 4–8 weeks (22,23).

7. Limitation

The biggest problem in this case was the lack of a randomised trial, which severely limited the number of results that could be drawn from the study.

8. Conclusion

A surgeon who had an established level of expertise with basic laparoscopic procedures, as well as a high patient entry requirements, could successfully implement laparoscopic intraperitoneal onlay umbilical mesh hernia repair.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Further Reading

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